

**ABSTRACT**

There is provided an implantable cardiac pacing system or other cardiac monitoring system having an enhanced capability to classify intracardiac signals through a combination of DSP techniques and software algorithms. The implantable device has one or more DSP channels corresponding to different signals which are being monitored. Each DSP channel most preferably amplifies the incoming signal, converts the signal from analog to digital form, digitally filters the converted signals to provide a filtered signal, operates on the filtered signal to provide a slope signal, determines from the filtered and slope signals when an intracardiac event has been detected, signal processes the filtered and slope signals for a predetermined analysis interval after threshold crossing, and generates a plurality of wave parameters corresponding to the signal. The generated wave parameters are further operated on by a programmable algorithm to classify the detected event based upon DSP-generated parameters, and then monitor or detect the onset, development or presence of an undesired heart condition in a patient. The system may further provide for the delivery of treatment, storage of intracardiac data, or provision of a warning to a patient or physician in response to the detection of such a heart condition.